



# Unsutured phakic implantation of a black intraocular lens in the sulcus to treat leukocoria

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We describe a 40-year-old woman with von Hippel-Lindau syndrome, secondary chronic exudative retinal detachment, and white cataract with consequent leukocoria. Because the cataract was contracted and calcified, a black Morcher 85F poly(methyl methacrylate) IOL was implanted in the ciliary sulcus anterior to the lens to prevent posterior capsule rupture and potential destabilization of the retinal detachment with a risk for phthisis. Excellent centration of the black IOL was achieved with good cosmetic outcome and without postoperative uveitis or glaucoma. We suggest that this is a rare indication for implantation of an IOL designed for the sulcus but in the presence of the crystalline lens. This approach makes IOL removal, if necessary at a later date, relatively straightforward.

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The management of cosmetically unacceptable leukocoria in blind eyes may be achieved by use of occlusive contact lenses, corneal tattooing (keratopigmentation), and implantation of a black intraocular lens (IOL). Occlusive contact lenses have the advantage of being easy to fit but require daily maintenance and are not always tolerated. Keratopigmentation is less

reversible; has poor cosmesis when viewed obliquely because of parallax; and may be complicated by the spread of dye beyond the target area, with the risk for recurrent corneal erosions.<sup>1</sup> Occlusive black IOLs offer a more definitive treatment and have been associated with good cosmetic outcomes.<sup>2,3</sup> We present a patient with leukocoria who had successful implantation of an occlusive IOL in the ciliary sulcus without sutured fixation.

## CASE REPORT

A 40-year-old woman with von Hippel-Lindau syndrome requested improvement of the cosmetic appearance of her right pupil, which appeared white. The leukocoria was due to an intumescent white cataract caused by an underlying total exudative retinal detachment. The cataract was shrunken centrally so zonular fibers were visible within the pupil margin and the ciliary sulcus was deepened. A thick posterior calcified plaque appeared to involve the posterior capsule. The eye was confirmed to have no light perception. The fellow eye was structurally normal. The patient had no systemic symptoms and continued to work as a lawyer.

After informed consent about the off-label use and potential risks of surgery was obtained, a black occlusive IOL (model 85F, Morcher GmbH) was implanted. The IOL, which has a 6.0 mm optic with a 12.0 mm haptic-to-haptic diameter, was inserted via a scleral tunnel into the ciliary sulcus without removing the crystalline lens. Although eyelets are present on

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each IOL haptic, sutured fixation was not required; the IOL was well-centered following removal of the ophthalmic viscosurgical device. The lens capsule was not disturbed intraoperatively. A surgical peripheral iridotomy was performed in a cosmetically acceptable location under the upper eyelid to prevent pupillary block (Figure 1).

Two months after surgery, the patient remained delighted with the cosmetic appearance and examination showed minimal anterior chamber inflammation, a normal intraocular pressure, and a well-centered IOL. There was no posterior segment view.

## DISCUSSION

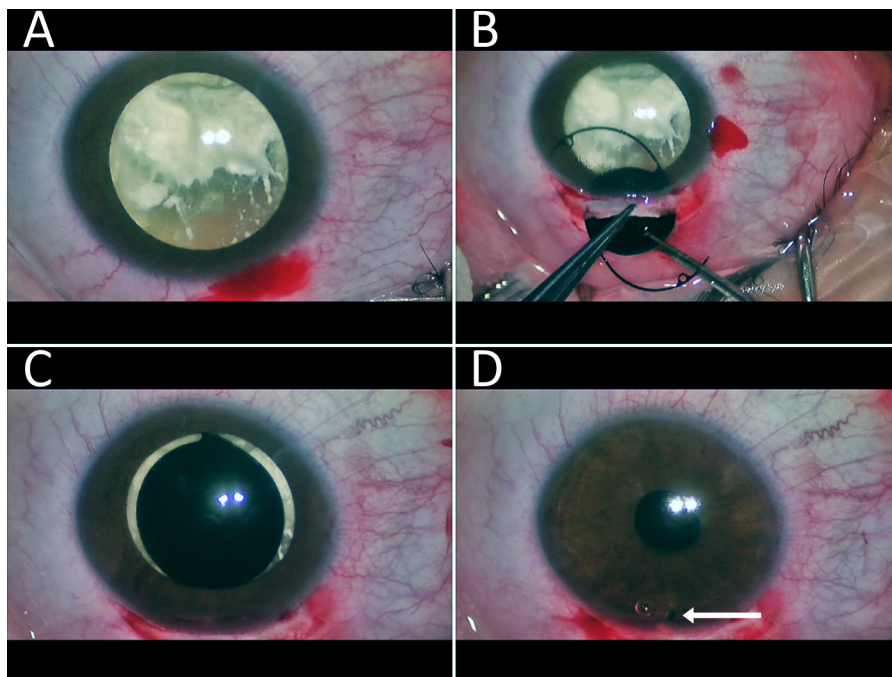
The cosmetic management of leukocoria with the use of an occlusive poly(methyl methacrylate) (PMMA) IOL has been reported.<sup>2,4,5</sup> Previous cases have described black IOLs implanted in the capsular bag following phacoemulsification<sup>3,6</sup> or sutured into the ciliary sulcus in phakic eyes.<sup>2,5</sup>

We describe a minimally traumatic surgical approach using an unsutured black IOL in the ciliary sulcus. Despite there being an intumescent cataract that could cause lens-induced uveitis because of the presence of an exudative retinal detachment related to von Hippel-Lindau syndrome, it was decided not to perform cataract surgery as posterior capsule rupture and vitreous loss would risk destabilizing the chronic retinal detachment and could lead to phthisis bulbi. Instead, the black IOL was implanted directly into the ciliary sulcus through a scleral tunnel with good centration. Sutured fixation risks additional manipulation within the anterior chamber, risking

damage to the lens capsule, which might necessitate lens removal; IOL suturing should therefore be omitted if not required. Centration of the black IOL was satisfactory intraoperatively and was maintained throughout the follow-up period. Although sutured black IOLs have been described in blind phakic eyes,<sup>2,5</sup> an unsutured surgical approach may reduce the risk for inadvertent damage of the lens capsule in the process of sutured fixation.

Reports of phakic black IOL implantation in patients with leukocoria for retinal detachment, Coats disease, and cataract are limited. Wong et al.<sup>3</sup> report a case series of 4 eyes that had implantation of the Morcher 81D black occlusive IOL for leukocoria. Two patients had primary phacoemulsification and two, phakic implantation. In all cases, the IOL was implanted in the ciliary sulcus via a 7.0 mm corneal section and was associated with good cosmetic outcomes. Mild IOL subluxation was reported but did not affect patient satisfaction. Glaucoma occurred in one patient and was successfully managed with topical antihypertensive therapy.

Preoperative scotopic pupillometry should be considered in patients with large pupil diameters in whom a 6.0 mm occlusive optic may not be sufficient to prevent a white reflex.<sup>6</sup> Options for phakic black IOL implantation in this patient group include sulcus fixation of a Morcher 6S PMMA IOL with a 10.0 mm optic<sup>6</sup> or an Ophtec Artisan iris-claw IOL; enclavation iris fixation may help to overcome difficulty in patients with large pupil diameters.<sup>7</sup> The intended benefits of



**Figure 1.** Unsutured black IOL implantation in the ciliary sulcus in an eye with leukocoria. A: Leukocoria caused by a centrally calcified cataract from an underlying exudative retinal detachment. Note the clearer region of the cataract superiorly. B: Insertion of an occlusive IOL into the ciliary sulcus via a scleral tunnel incision. C: Well-positioned IOL in the ciliary sulcus overlying the cataract. D: The eye after performance of a cosmetically acceptable superior peripheral iridotomy to prevent pupillary block.

eliminating leukocoria must be weighed against the potential risk for glaucoma and endothelial failure with these implants.

An additional advantage of the 85F occlusive IOL derives from its spectral transmission characteristics. The IOL transmits high levels of near-infrared light above 720 nm, a property not shared by other occlusive IOLs in clinical use.<sup>8</sup> This permits imaging of the posterior segment using scanning laser ophthalmoscopy or optical coherence tomography.<sup>8</sup> Although the treatment of retinal pathology associated with leukocoria may not be possible, monitoring intractable conditions would provide prognostic information regarding the lifespan of the eye. In eyes with leukocoria and useful visual potential,<sup>4</sup> a near infrared-transmitting IOL would be advisable for structural monitoring of the posterior segment.

In summary, we demonstrate that unsutured phakic implantation of a black IOL within the ciliary sulcus achieved stable and effective occlusion in a patient with leukocoria due to a contracted calcified cataract. The IOL can be removed easily at a later date if no longer indicated.

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